IN THE CLAIMS

Please amend the claims to read as follows:

Listing of Claims

1-32. (Canceled).

33. (New) A method for decoding at least one codeword comprising n code bits in a decoder, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the method comprising:

a) for each non-zero entry in the parity check matrix, initializing message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the elements of a second message matrix based on message matrix elements of said first message matrix,

wherein a subset of message matrix elements from said first message matrix is used for determining a message matrix element of said second message matrix and the message matrix elements of said subset fulfill a first reliability criterion,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix,

d) updating the message matrix elements of the first message matrix based on a subset of message matrix elements of said second message matrix, wherein the message matrix elements of said subset fulfill a second reliability criterion, and performing iterations by repeating steps b) and d).

34. (New) A method for decoding at least one codeword comprising n code bits in a decoder, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the method comprising:

a) for each non-zero entry in a parity check matrix, initializing the message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the message matrix elements of a second message matrix based on message matrix elements of said first message matrix,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix,

d) for each non-zero entry in the parity check matrix, updating the message matrix elements of the first message matrix based on message matrix elements of the second message matrix, wherein a subset of message matrix elements of said second message matrix is used to update a message matrix element of said first message matrix and the message matrix elements of said subset fulfill a first reliability criterion, and performing iterations by repeating steps b) and d).

35. (New) The method according to claim 34, wherein a subset of message matrix elements of said first message matrix is used for determining a message matrix element of said second message matrix, wherein the message matrix elements of said subset fulfill a second reliability criterion.

36. (New) The method according to claim 33, wherein the step of performing iterations further comprises the step of repeating step c).

37. (New) The method according to claim 34, wherein the step of performing iterations further comprises the step of repeating step c).

38. (New) The method according to claim 33, further comprising the step of:

e) checking whether parity check equations of the parity-check matrix are satisfied by the reconstructed codeword.

39. (New) The method according to claim 34, further comprising the step of:

e) checking whether parity check equations of the parity-check matrix are satisfied by the reconstructed codeword.

40. (New) The method according to claim 33, wherein the iteration is stopped upon reaching on predetermined number of iterations or in case the decoded codeword satisfies the parity check equations.

41. (New) The method according to claim 34, wherein the iteration is stopped upon reaching on predetermined number of iterations or in case the decoded codeword satisfies the parity check equations.

42. (New) The method according to claim 33, wherein the data obtained from a demodulator comprises parameters representing one

of a likelihood ratio, a likelihood difference or a probability for each of the n code bits of a codeword.

43. (New) The method according to claim 42, wherein the data obtained from the demodulator further comprises indications which of the parameters fulfill the reliability criterion.

44. (New) The method according to claim 33, further comprising the step of updating the subset of message matrix elements of said second message matrix used to determine the message matrix elements of said first message matrix upon determining new message matrix elements of said second message matrix in one of said iteration steps.

45. (New) The method according to claim 44, wherein in the step of updating the subset of message matrix elements of said second message matrix, the updated subset comprises only message matrix elements of the second message matrix fulfilling the second reliability criterion.

46. (New) The method according to claim 33, further comprising the step of updating the subset of message matrix elements of said first message matrix used to determine the

message matrix elements of said second message matrix upon determining new message matrix elements of said first message matrix in one of said iteration steps.

47. (New) The method according to claim 46, wherein in the step of updating the subset of message matrix elements of said first message, the updated subset comprises only message matrix elements of the first message matrix fulfilling the first reliability criterion.

48. (New) The method according to claim 33, wherein the first or second reliability criterion is based on at least one of channel estimations of a radio channel via which the codeword has been received, the absolute values of the elements of the first and/or second message matrix, the absolute values of the data provided by the demodulator, the number of iterations in the decoding which have already been processed, the maximum number of iterations to be performed in the decoding process, and a random process.

49. (New) The method according to claim 48, wherein the second/first reliability criterion is not fulfilled by a message matrix element of the first/second message matrix, if the signal

to noise ratio for the element and/or the absolute value of the element is below a predetermined threshold value.

50. (New) The method according to claim 33, wherein the error correcting code is a low-density parity-check code.

51. (New) A decoder for decoding at least one codeword, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the decoder comprising a processing unit for:

a) for each non-zero entry in a parity check matrix, initializing the message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the elements of a second message matrix based on message matrix elements of said first message matrix,

wherein a subset of message matrix elements from said first message matrix is used for determining a message matrix element of said second message matrix and the message matrix elements of said subset fulfill a first reliability criterion,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix, and

d) updating the message matrix elements of the first message matrix based on a subset of message matrix elements of said second message matrix, wherein the message matrix elements of said subset fulfill a second reliability criterion,

wherein the processing unit is cofigured to perform iterations by repeating steps b) and d).

52. (New) A decoder for decoding at least one codeword, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the decoder comprising a processing unit for:

a) for each non-zero entry in a parity check matrix, initializing the message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the message matrix elements of a second message matrix based on message matrix elements of said first message matrix,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix, and

d) for each non-zero entry in the parity check matrix, updating the message matrix elements of the first message matrix based on message matrix elements of the second message matrix, wherein a subset of message matrix elements of said second message matrix is used to update a message matrix element of said first message matrix, wherein the message matrix elements of said subset fulfill a first reliability criterion,

wherein the processing unit is adapted to perform iterations by repeating steps b) and d).

53. (New) A mobile terminal in a mobile communication system, comprising:

a receiving unit for receiving at least one codeword,

a demodulation unit for demodulating the at least one received codeword and for data to a decoder, and

a decoder according to claim 51.

54. (New) The mobile terminal according to claim 53, further comprising a coding unit for encoding data in at least one codeword, and a transmission unit for transmitting the at least

one codeword, and wherein at least one transmitted codeword is suitable for decoding according to a method for decoding at least one codeword comprising n code bits in a decoder, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the method comprising:

a) for each non-zero entry in the parity check matrix, initializing message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the elements of a second message matrix based on message matrix elements of said first message matrix, wherein a subset of message matrix elements from said first message matrix is used for determining a message matrix element of said second message matrix and the message matrix elements of said subset fulfill a first reliability criterion,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix,

d) updating the message matrix elements of the first message matrix based on a subset of message matrix elements of said second message matrix, wherein the message matrix elements of said subset fulfill a second reliability criterion, and

performing iterations by repeating steps b) and d).

55. (New) A mobile terminal in a mobile communication system, comprising:

a receiving unit for receiving at least one codeword,

a demodulation unit for demodulating the at least one received codeword and for data to a decoder, and

a decoder according to claim 52.

56. (New) The mobile terminal according to claim 55, further comprising a coding unit for encoding data in at least one codeword, and a transmission unit for transmitting the at least one codeword, and wherein at least one transmitted codeword is suitable for decoding according to a method for decoding at least one codeword comprising n code bits in a decoder, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the method comprising:

a) for each non-zero entry in a parity check matrix, initializing the message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the message matrix elements of a second message

matrix based on message matrix elements of said first message matrix,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix,

d) for each non-zero entry in the parity check matrix, updating the message matrix elements of the first message matrix based on message matrix elements of the second message matrix, wherein a subset of message matrix elements of said second message matrix is used to update a message matrix element of said first message matrix and the message matrix elements of said subset fulfill a first reliability criterion, and performing iterations by repeating steps b) and d).

57. (New) A base station in a mobile communication system, comprising:

a receiving unit for receiving at least one codeword,

a demodulation unit for demodulating the at least one received codeword and for delivering data to a decoder, and

the decoder according to claim 51.

58. (New) The base station according to claim 57, further comprising a coding unit for encoding data in at least one

codeword, and a transmission unit for transmitting the at least one codeword, and wherein at least one transmitted codeword is suitable for decoding according to a method for decoding at least one codeword comprising n code bits in a decoder, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the method comprising:

a) for each non-zero entry in the parity check matrix, initializing message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the elements of a second message matrix based on message matrix elements of said first message matrix, wherein a subset of message matrix elements from said first message matrix is used for determining a message matrix element of said second message matrix and the message matrix elements of said subset fulfill a first reliability criterion,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix,

d) updating the message matrix elements of the first message matrix based on a subset of message matrix elements of

said second message matrix, wherein the message matrix elements of said subset fulfill a second reliability criterion, and performing iterations by repeating steps b) and d).

59. (New) A base station in a mobile communication system, comprising:

a receiving unit for receiving at least one codeword,

a demodulation unit for demodulating the at least one received codeword and for delivering data to a decoder, and

the decoder according to claim 52.

60. (New) The base station according to claim 59, further comprising a coding unit for encoding data in at least one codeword, and a transmission unit for transmitting the at least one codeword, and wherein at least one transmitted codeword is suitable for decoding according to a method for decoding at least one codeword comprising n code bits in a decoder, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the method comprising:

a) for each non-zero entry in a parity check matrix, initializing the message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the message matrix elements of a second message matrix based on message matrix elements of said first message matrix,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix,

d) for each non-zero entry in the parity check matrix, updating the message matrix elements of the first message matrix based on message matrix elements of the second message matrix, wherein a subset of message matrix elements of said second message matrix is used to update a message matrix element of said first message matrix and the message matrix elements of said subset fulfill a first reliability criterion, and performing iterations by repeating steps b) and d).

61. (New) A mobile communication system comprising:

at least one base station according to claim 57; and

at least one mobile terminal comprising:

a receiving unit for receiving at least one codeword,

a demodulation unit for demodulating the at least one received codeword and for data to a decoder, and

a decoder for decoding at least one codeword, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the decoder comprising a processing unit for:

a) for each non-zero entry in a parity check matrix, initializing the message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the elements of a second message matrix based on message matrix elements of said first message matrix, wherein a subset of message matrix elements from said first message matrix is used for determining a message matrix element of said second message matrix and the message matrix elements of said subset fulfill a first reliability criterion,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix, and

d) updating the message matrix elements of the first message matrix based on a subset of message matrix elements of said second message matrix, wherein the message matrix elements of said subset fulfill a second reliability criterion,

wherein the processing unit is cofigured to perform iterations by repeating steps b) and d).

62. (New) A mobile communication system comprising:

at least one base station according to claim 59; and

at least one mobile terminal comprising:

a receiving unit for receiving at least one codeword,

a demodulation unit for demodulating the at least one received codeword and for data to a decoder, and

a decoder for decoding at least one codeword, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the decoder comprising a processing unit for:

a) for each non-zero entry in a parity check matrix, initializing the message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the message matrix elements of a second message matrix based on message matrix elements of said first message matrix,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix, and

d) for each non-zero entry in the parity check matrix, updating the message matrix elements of the first message matrix based on message matrix elements of the second message matrix, wherein a subset of message matrix elements of said second message matrix is used to update a message matrix element of said first message matrix, wherein the message matrix elements of said subset fulfill a first reliability criterion,

wherein the processing unit is adapted to perform iterations by repeating steps b) and d).

63. (New) A method for decoding at least one codeword comprising n code bits in a decoder, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the method comprising:

a) for each non-zero entry in the parity check matrix, initializing message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the elements of a second message matrix based on message matrix elements of said first message matrix, wherein a subset of message matrix elements from said first message matrix is used for determining a message matrix element of said second message matrix and the message matrix elements of said subset fulfill a first reliability criterion,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix, and

d) updating the message matrix elements of the first message matrix based on a subset of message matrix elements of said second message matrix, wherein the message matrix elements of said subset fulfill a second reliability criterion, performing iterations by repeating steps b) and d), wherein the first or the second reliability criterion is redefined in at least one of the iteration steps.

64. (New) A method for decoding at least one codeword comprising n code bits in a decoder, the decoding being performed as message passing on a graph representation of the used code, wherein the graph representation is based on a parity check matrix, the method comprising:

a) for each non-zero entry in a parity check matrix, initializing the message matrix elements of a first message matrix with data obtained from a demodulator,

b) for each non-zero entry in the parity check matrix, determining the message matrix elements of a second message matrix based on message matrix elements of said first message matrix,

c) reconstructing a decoded codeword based on the data obtained from the demodulator and the message matrix elements of the second message matrix, and

d) for each non-zero entry in the parity check matrix, updating the message matrix elements of the first message matrix based on message matrix elements of the second message matrix,

wherein a subset of message matrix elements of said second message matrix is used to update a message matrix element of said first message matrix and the message matrix elements of said subset fulfill a first reliability criterion, performing iterations by repeating steps b) and d), wherein the first or the second reliability criterion is redefined in at least one of the iteration steps.